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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,546	07/06/2001	Irene Spitsberg	13DV13486	5045
31450	7590	11/13/2003		EXAMINER
MCNEES WALLACE & NURICK LLC 100 PINE STREET P.O. BOX 1166 HARRISBURG, PA 17108-5300			MEEKS, TIMOTHY HOWARD	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/900,546	SPITSBERG, IRENE	
	<b>Examiner</b>	<b>Art Unit</b>	
	Timothy H. Meeks	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 25 September 2003.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-18 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) 1-19 are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ .                                   |

**DETAILED ACTION**

***Election/Restrictions***

Applicant continues to traverse the restriction requirement made final in the last office action. Applicant has amended claim 19 to further define the product as being made by forming the alumina layer at 1800°F to 2000°F and argue that the materially different method proposed by the examiner of oxidizing in a solution of hydrogen peroxide would still generate a partial pressure of oxygen at the claimed temperatures and therefore is not materially different. Please note that the product produced by reacting a PtAl layer with hydrogen peroxide solution in a wet chemical oxidation would be expected to be the same as that produced by reacting the PtAl layer with a partial pressure of oxygen at a temperature of 1800-2000°F in a gas phase oxidation. That is, both processes would reasonably be expected to result in the formation of an alumina layer. The examiner has shown that the inventions are distinct in that the product could be produced by this materially different process. Furthermore, an undue burden exists to examine both inventions in one application in that there are different issues involved in determining the patentability of the coated product versus determining patentability of the claimed method for making that product. As established above, the product could be made by materially different processes, therefore, the search for the product and process, although overlapping, is not completely coextensive. Furthermore, the patentability of the product must be determined based on the properties of the claimed product, not based on the method by which it is made. The product only derives patentability from the method by which it is made if it is shown that the method imparts properties to the product that are not anticipated or rendered obvious from prior art products. This determination is required for the product claims but not the elected method

claims. As the examiner has shown the inventions to be distinct and there is an undue burden to examine both inventions, the restriction is still deemed proper and is therefore being maintained.

***Claim Objections***

Claim 7 is objected to because of the following informalities: The new wording is awkward. It is suggested that applicants amend the claim as follows: delete "vapor phase" at line 2 and reinsert the phrase prior to "aluminum" at line 4, delete "at a sufficiently high temperature" at line 3 and reinsert it at line 4 where the word "temperature" was deleted to improve the wording of the claim.

***Claim Rejections - 35 USC § 112***

The rejection of claim 1 under 35 USC 112, first paragraph set forth in the last office action is withdrawn in view of the argument set forth on page 7 of the 25 September 2003 amendment.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-18 are indefinite because no units are provided for the recited range of surface finish  $R_a$ , hence it is impossible to ascertain the metes and bounds of the numerical range. 32 microinches  $R_a$  is quite different from 32 microns  $R_a$ , for example. For the purposes of applying prior art, it will be considered that Ra values of any unit falling in the claimed range will meet the limitations of the claims.

Applicant argues that "all average roughness values listed in the in the specification utilize the English convention of microinches. Applicants have provided no evidence, however, that microinches is the English convention for the measurement of surface roughness  $R_a$ . A review of the patent literature reveals that  $R_a$  is cited in units ranging from microinches, mils, microns, centimeters, etc. The rejection will be withdrawn if applicants provide evidence that one of ordinary skill in the art would readily understand that the units for surface roughness  $R_a$  are in microinches and therefore that the metes and bounds of the claimed surface roughness are understood. This is especially critical as surface roughness of the treated surface appears to be critical to the invention as argued by applicant on page 7 of the 25 September 2003 amendment.

#### *Claim Rejections - 35 USC § 102*

The rejection of Claim 1 under 35 U.S.C. 102(e) as being anticipated by Warnes et al. (6,472,018) is withdrawn in view of the amendment to claim 1 made in the 25 September 2003 amendment.

Warnes discloses the limitations of claim 1 as follows:

- "providing a gas turbine.....high temperatures" ( col. 1, lines 10-12);

- “applying a thin layer.....preselected time; then” (col. 3, line 48 to col. 4, line 10, please note that the MDC-150L is a single phase platinum aluminide coating as described in USP 5,658,614 which is incorporated by reference into Warnes);
- “providing the single phase.....gradients of nickel, aluminum and platinum” (col. 4, lines 20-35 as well as col. 5, lines 15-55 describing media bowl polishing, vapor honing, and grit blasting of the coating which processes would remove any oxides and provide a clean surface. As shown at col. 4, lines 20-35, the PtAl coating of Warnes does not include “local gradients of nickel....”.)
- “grit blasting the single phase platinum aluminide” (col. 5, lines 38-45); and
- “preoxidizing the single phase platinum aluminide.....thin layer of pure alumina” (col. 5, lines 53-55; col. 7, lines 8-67).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warnes et al. (6,472,018) in view of EP 969117

Warnes discloses the following limitations of claims 1 and 2:

- “providing a gas turbine.....high temperatures” ( col. 1, lines 10-12);

- “applying a thin layer.....preselected time; then” (col. 3, line 48 to col. 4, line 10, please note that the MDC-150L is a single phase platinum aluminide coating as described in USP 5,658,614 which is incorporated by reference into Warnes);
- “grit blasting the single phase platinum aluminide using a grit....preselected pressure” (col. 5, lines 38-45) and “cleaning the single phase.....gradients of nickel, aluminum and platinum” (col. 4, lines 20-35 as well as col. 5, lines 15-55 describing media bowl polishing, vapor honing, and grit blasting of the coating which processes would remove any oxides and provide a clean surface. As shown at col. 4, lines 20-35, the PtAl coating of Warnes does not include “local gradients of nickel....”); and
- preoxidizing the single phase platinum aluminide.....thin layer of pure alumina” (col. 5, lines 53-55; col. 7, lines 8-67).

Warnes does not explicitly disclose that the grit blasting is performed “for a time sufficient to achieve a surface finish of between about 32 R<sub>a</sub> and 63 R<sub>a</sub>” or to provide a surface roughness between 16 R<sub>a</sub> and 125 R<sub>a</sub>. However, because EP 969117 discloses at paragraphs 0016 and 0019 that grit blasting a PtAl bond coat prior to oxidizing to form an alumina scale thereon with alumina particles of 80 mesh or more coarse (36, 54, and 80 mesh exemplified) and pressures of 40, 70 and 60 psi forms a surface roughness of 50 to 60 microinches R<sub>a</sub> and unexpectedly improves adhesion of the ceramic coating to the bond coat, it would have been obvious to have grit blasted the PtAl bond coat of Warnes with the particle sizes, pressures and to the roughnesses disclosed by EP 969117 because doing so would have been expected to improve adherence of the ceramic layer and bond coat.

The limitations of claims 3 and 4 are disclosed at col. 3, lines 33-35 of Warnes.

The limitations of claims 6 and 7 are disclosed at col. 3, line 50 to col. 4, line 5 of Warnes.

Use of the grit sizes and pressures of claims 8-11 is disclosed in the improved grit blasting process of EP 969117 as shown above.

Use of heating temperatures to form the alumina scale of claims 14-17 are disclosed at col. 7, lines 7-55 of Warnes. It is noted that most times for full transformation are less than an hour and begin in less time with higher temperature (see Table 1). Clearly one would seek to minimize time need for this process step so ramping to the desired heating temperature in the least amount of time possible would have been obvious to minimize process time.

The claim 18 limitation is disclosed at col. 7, lines 50-60.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Warnes in view EP 969117 as applied above, and further in view of Vakil (6,495,271)

Warnes discloses electroplating to deposit the thin Pt layer rather than CVD. However, because Vakil discloses at col. 3, lines 35-43 that both electroplating and CVD are effective methods for depositing a thin layer of Pt on a nickel based superalloy, it would have been obvious to use either electroplating or CVD to deposit the Pt layer as both methods are art-recognized equivalents for performing said step and hence one would expect to achieve equivalent results using either method.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Warnes in view EP 969117 as applied above, and further in view of Murphy (5,716,720)

Warnes is silent as to the partial pressure of oxygen provided but discloses that the formation of the alumina was performed in a similar process as to that disclosed in Murphy (col. 5, lines 53-55). Murphy discloses that a low partial pressure oxygen atmosphere is used, such as  $10^{-4}$  torr (col. 5, lines 10-15) to form the alumina scale, which falls within the claimed ranges. As such it would have been obvious to use this partial pressure of oxygen with a reasonable expectation of its being operable.

Claims 1-4 and 6-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 969117 in view of Basta et al. (5,658,614) and Murphy (5,716,720).

EP 969117 discloses the following limitations of claims 1 and 2:

- “providing a gas turbine.....high temperatures” (0013 and 0015);
- “applying a thin layer .....the component” (0019);
- “exposing the thin layer of platinum to a source of aluminum for a preselected time (0019);
- “grit blasting” the PtAl coating “using a grit of preslected.....R<sub>a</sub>; then”(0019);
- “providing” the PtAl coating “with a clean .....gradients of nickel, aluminum and platinum” (0019 in that the grit blasting of the PtAl is the same as that claimed and disclosed by applicants to achieve a “clean, uniform surface free of oxides and local gradients....” and hence would inherently provide the PtAl with these features); and
- “preoxidizing the” PtAl coating by heating it in a high temperature treatment specifically performed for this purpose to form a thin layer of pure alumina) (0016, oxidizing the clean PtAl that was grit blasted would provide pure alumina).

EP 969117 does not disclose that a single phase PtAl layer is formed or that the heat treatment of the aluminide to form alumina is performed by “heating the component in a preselected partial pressure of oxygen .....at a preslected rate”. However, because Basta discloses at col. 2, lines 1-20 that single phase PtAl bond coats have advantages over two phase PtAl bond coats of not having metastable phase assemblages and thicknesses, being sensitive to thermal fatigue cracking, or rumpling and Murphy discloses that heat treating single phase PtAl bond coats under the claimed conditions is effective for providing the stable alumina scale desired in EP 969117 (col. 5, lines 5-25 and col. 6, lines 15-25), it would have been obvious to have provided a single phase PtAl in the manner described by Basta to achieve the disclosed advantages thereof and to heat treat to form the alumina under the conditions of Murphy because doing so would have been expected to be effective for providing said alumina layer.

The limitations of the dependent claims are disclosed as follows:

- Claims 3 and 4 (EP 969117 at 0013 and 0015);
- Claims 6 and 7 (Basta at col. 5, line 50 to col. 6, line 15);
- Claims 8-11 (EP 969117 at 0019);
- Claims 12-17 (Murphy at sections cited above, please note that minimizing time to reach the heat treatment temperature would have been obvious for the reasons set forth above); and
- Claim 18 (EP 969117 at 0019).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 969117 in view of Basta et al. (5,658,614) and Murphy (5,716,720) as applied above and further in view of Vakil (6,495,271)

Basta discloses electroplating to deposit the thin Pt layer rather than CVD. However, because Vakil discloses at col. 3, lines 35-43 that both electroplating and CVD are effective methods for depositing a thin layer of Pt on a nickel based superalloy, it would have been obvious to use either electroplating or CVD to deposit the Pt layer as both methods are art-recognized equivalents for performing said step and hence one would expect to achieve equivalent results using either method.

#### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,565,672. Although the conflicting claims are not identical, they are not patentably distinct from each other because they differ only in scope.

Claims 1-18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,5576,067. Although the conflicting claims are not identical, they are not patentably distinct from each other because they differ only in scope.

***Response to Arguments***

Applicant's arguments filed on 25 September 2003 have been fully considered but they are not persuasive.

Applicant argues that the 1.131 affidavit shows that the invention was completed prior to the filing date of the Warnes patent. The examiner has fully reviewed said affidavit and has found that insufficient evidence has been provided to show that the invention was completed prior to the filing date of Warnes. Specifically, the documents cited in 2c of the affidavit, although showing that applicant had conceived and reduced to practice the "preoxidation" aspect of the instant claims, do not provide evidence that applicants had conceived of and reduced to practice the "surface roughness" aspect of the instant claims. It is noted that the affidavit refers to an "invention disclosure" in 2b, however, a copy of this document is not present in the application file.

Applicant argues that Warnes teaches away from combination with the Ep document in that it teaches away from grit blasting. Please note that Warnes does not teach that grit blasting is inoperable, only that media bowl polishing produces better results than grit blasting in terms of coating life. EP, on the other hand, discloses that when grit blasting is performed under certain conditions to provide a certain surface roughness of a bond coat that adhesion of the ceramic layers is enhanced. Hence, there is no "teaching away" from the combination of the references

and it is submitted that one would have combined the teachings of the references in that one viewing the teachings of the references as a whole would reasonably expect that grit blasting the bond coat under the conditions described in the EP reference would provide enhanced adhesion of the bond coat to the ceramic layer.

Applicants argue that there is no motivation to preoxidize in a separate step as taught by Murphy. However, Murphy discloses that preoxidizing in the claimed manner prior to applying ceramic is an effective method to provide an alumina scale on a single phase PtAl bond coat as disclosed as desirable for use by Basta. As established in the rejection, Basta provides motivation to use a single phase PtAl bond coat as the bond coat in the TBC system. However, Basta is silent as to the manner in which the other components of the TBC system should be applied thereto. Murphy discloses that those layers are effectively formed on the single phase PtAl layer by preoxidizing the layer in a partial pressure of oxygen at elevated temperature and then applying the ceramic thereon by EBPVD. Hence one would be motivated to use this method to form the required alumina and ceramic layers of the TBC system due to the reasonable expectation of this being successful for providing those layers on the single phase PtAl layer.

### *Conclusion*

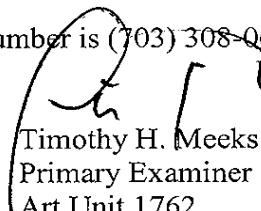
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy H. Meeks whose telephone number is (703) 308-3816. The examiner can normally be reached on Mon., Tues., Thurs.(6-6:30), Fri.(6:30-10:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Timothy H. Meeks  
Primary Examiner  
Art Unit 1762